

(FILE 'HOME' ENTERED AT 12:18:25 ON 09 JUN 2003)

FILE 'INSPEC' ENTERED AT 12:18:56 ON 09 JUN 2003

L1 1481 GALLIUM (2A)NITRIDE  
L2 13606 GAN  
L3 13725 L1 OR L2  
L4 7904 CATALYST  
L5 0 CATLY#####  
L6 98 CATL#####  
L7 0 CTAAL#####  
L8 47099 CATAL#####  
L9 47099 L4 OR L8  
L10 24689 P-TYPE OR P-GAN  
L11 107 L9 (P)L10  
L12 146795 REMOV##### OR STRIP#####  
L13 2 L11 AND L12

FILE 'CA' ENTERED AT 12:29:52 ON 09 JUN 2003

FILE 'CA' ENTERED AT 12:30:00 ON 09 JUN 2003

L14 26 L13  
L15 26 L10 AND L14  
L16 22328 L1 OR L2  
L17 1 L16 AND L15

=>

> d 113 1-2 all

- L13 ANSWER 1 OF 2 INSPEC COPYRIGHT 2003 IEE  
AN 2002:7187476 INSPEC DN A2002-07-7360L-005; B2002-03-2520D-040  
TI **Catalytic** effect of Ni for activation of Mg-doped GaN in N<sub>2</sub> and N<sub>2</sub>O.  
AU Waki, I.; Fujioka, H.; Oshima, M. (Dept. of Appl. Chem., Tokyo Univ., Japan); Miki, H.; Okuyama, M.  
SO Journal of Crystal Growth (Jan. 2002) vol.234, no.2-3, p.459-62. 16 refs.  
Doc. No.: S0022-0248(01)01704-3  
Published by: Elsevier  
Price: CCCC 0022-0248/02/\$22.00  
CODEN: JCRGAE ISSN: 0022-0248  
SICI: 0022-0248(200201)234:2/3L.459:CEAD;1-8  
DT Journal  
TC Experimental  
CY Netherlands  
LA English  
AB **Catalytic** effect of Ni for activation of metalorganic chemical vapor deposition-grown Mg-doped GaN in N<sub>2</sub> and N<sub>2</sub>O has been investigated. **p-type** GaN has been obtained at an annealing temperature as low as 200 degrees C using the Ni **catalytic** film in N<sub>2</sub>O as well as in N<sub>2</sub>. Moreover, the hole concentrations for the samples obtained by annealing in N<sub>2</sub>O were in good agreement with those obtained in N<sub>2</sub> in the whole annealing temperature range. These results indicate that the Ni film effectively acts as a **catalyst** to enhance hydrogen desorption at the surface of GaN, which results in the reduction of hydrogen concentration in GaN at low annealing temperatures. It has also been suggested that the **catalytic** activity of Ni to enhance hydrogen desorption is much stronger than that of N<sub>2</sub>O. Therefore, an introduction of oxygen in the annealing atmosphere is not necessary for effective **removal** of hydrogen under the existence of the Ni film.  
CC A7360L Electrical properties of III-V and II-VI semiconductors (thin films/low-dimensional structures); A7155G Impurity and defect levels in II-VI and III-V semiconductors; A7220F Low-field transport and mobility; piezoresistance (semiconductors/insulators); A7280E Electrical conductivity of III-V and II-VI semiconductors; A6855 Thin film growth, structure, and epitaxy; A6845D Adsorption and desorption kinetics; evaporation and condensation; A8265M Sorption and accommodation coefficients (surface chemistry); A6170A Annealing processes; A8265J Heterogeneous catalysis at surfaces and other surface reactions; B2520D II-VI and III-V semiconductors; B2550A Annealing processes in semiconductor technology  
CT ANNEALING; **CATALYSIS**; DESORPTION; GALLIUM COMPOUNDS; HOLE DENSITY; III-V SEMICONDUCTORS; MAGNESIUM; MOCVD COATINGS; SEMICONDUCTOR THIN FILMS; SURFACE CHEMISTRY  
ST **Ni catalytic film; p-GaN:Mg**; activation; metalorganic chemical vapor deposition; MOCVD film; N<sub>2</sub> ambient; N<sub>2</sub>O ambient; annealing temperature; hole concentration; enhanced H desorption; annealing atmosphere; 200 degC; GaN:Mg; N<sub>2</sub>; N<sub>2</sub>O; H; Ni  
CHI GaN:Mg sur, GaN sur, Ga sur, Mg sur, N sur, GaN:Mg ss, Ga ss, Mg ss, N ss, GaN bin, Ga bin, N bin, Mg el, Mg dop; N<sub>2</sub> el, N el; N<sub>2</sub>O bin, N<sub>2</sub> bin, N bin, O bin; H ads, H el; Ni el  
PHP temperature 4.73E+02 K  
ET Ni; Mg; Ga\*N; GaN; Ga cp; cp; N cp; N<sub>2</sub>; N\*O; N<sub>2</sub>O; O cp; C; V; Ga\*Mg\*N; Ga sy 3; sy 3; Mg sy 3; N sy 3; GaN:Mg; Mg doping; doped materials; H; Ga; N; O  
  
L13 ANSWER 2 OF 2 INSPEC COPYRIGHT 2003 IEE  
AN 1993:4522288 INSPEC DN A9324-8780-022; B9312-7230J-031  
TI An integrated silicon thermopile as biosensor for the thermal monitoring of glucose, urea and penicillin.  
AU Bataillard, P.; Steffgen, E.; Haemmerli, S.; Manz, A.; Widmer, H.M. (Corp.

Anal. Res., Ciba-Geigy Ltd., Basel, Switzerland)  
SO Biosensors & Bioelectronics (1993) vol.8, no.2, p.89-98. 10 refs.  
Price: CCCC 0956-5663/93/\$6.00  
CODEN: BBIOE4 ISSN: 0956-5663  
DT Journal  
TC Practical; Experimental  
CY United Kingdom

AN 59:32410 CA

OREF 59:5823d-h

TI Effect of prior surface treatment of germanium on the kinetics of catalytic dehydrogenation of isopropyl alcohol

AU Frolov, V. M.; Radzhabli, E. K.

SO Azerbaidzhanskii Khimicheskii Zhurnal (1962), (6), 47-52

CODEN: AZKZAU; ISSN: 0005-2531

DT Journal

LA Unavailable

CC 5 (Catalysis and Reaction Kinetics)

AB Ge **catalysts** were prep'd. by pulverizing (sp. surface .apprx.0.1 m.<sup>2</sup>/g.) single crystals of both n-type and **p-type** Ge (sp. resistance: 0.3 and 0.5 ohm-cm.) at room temp. in air and subsequent exposure to a vacuum of 10<sup>-5</sup>-10<sup>-6</sup> mm. at 320.degree.. With the help of these **catalysts** (10 g. of Ge powder per **catalytic** batch), dehydrogenation of iso-PrOH was carried out in a static vacuum regime at 260-320.degree.. The progress of the reaction was followed by manometric measurement of the H pressure and by the detn. of the other components of the reaction (iso-PrOH alc. and Me<sub>2</sub>CO) which were frozen out in a trap cooled with liquid N and dry ice. Repeated **catalytic** expts. were performed at 320.degree.. The **catalytic** activity of the powd. Ge samples, which was rather low initially, increased from expt. to expt. until in the 4th or 5th expt., it attained a const. value. This increase in activity is ascribed to the progressive **removal** of chemisorbed O according to the scheme: (CH<sub>3</sub>)<sub>2</sub>CHOH + O (chemisorbed) → (CH<sub>3</sub>)<sub>2</sub>CO + H<sub>2</sub>O. The kinetics of dehydrogenation on Ge **catalyst** was studied after max. activity of the **catalyst** had first been achieved. Up to a conversion degree of about 0.5, the partial H pressure increases steeply with reaction time. Thereafter, a sharp decline in reaction rate is observed. This inhibition was a result of the reversible adsorption of Me<sub>2</sub>CO on the Ge **catalyst**. The Me<sub>2</sub>CO could be **removed** easily from the **catalyst** surface by a short outgassing process. The apparent activation energies of this **catalytic** dehydrogenation reaction were 18.3 and 17.5 kcal./mole for the n-type and **p-type** Ge, resp., which indicates that the type of conduction in the **catalyst** has no important bearing on the **catalysis** in the case where pre-treatment of the **catalyst** is carried out at 320.degree.. A comparison of the present results with previously published data shows that pre-treatment of the **catalysts** in vacuo at 650.degree. is far more effective (by approx. 2 orders of magnitude) in increasing the **catalytic** activity of Ge than the treatment at 320.degree.. Pre-treatment at 650.degree. showed a much higher activity for the **p-type** samples. The transition from n-type to **p-type** was accompanied by a significant decrease in the activation energy for dehydrogenation with the intrinsic Ge samples occupying a position intermediate between the 2 extrinsic types.

IT Catalysts and Catalysis

(in dehydrogenation, of iso-PrOH, Ge as, surface pretreatment effect on)

IT Catalysts and Catalysis

(in hydrogenation of CO, to higher hydrocarbons)

IT Adsorption

(of acetone by Ge catalysts in dehydrogenation of iso-PrOH)

IT Reaction kinetics and(or) Velocity

(of dehydrogenation of iso-PrOH on Ge catalysts, surface pretreatment effect on)

IT Activation energy, Heat of activation

(of dehydrogenation, of iso-PrOH on Ge catalysts)

IT Dehydrogenation

(of isopropyl alc., with Ge catalysts, surface pretreatment effect on)

IT Desorption

(of oxygen, from Ge catalysts in dehydrogenation of iso-PrOH)

IT. Germanium, aluminum  
     (catalysts, in dehydrogenation of iso-PrOH, surface pretreatment in  
     relation to)  
 IT 67-64-1, Acetone  
     (adsorption of, by Ge catalysts in dehydrogenation of iso-PrOH)  
 IT 67-63-0, Isopropyl alcohol  
     (dehydrogenation of, Ge catalysts in, surface pretreatment effect on)  
 IT 7782-44-7, Oxygen  
     (desorption from Ge in dehydrogenation of iso-PrOH)

L14 ANSWER 24 OF 26 CA COPYRIGHT 2003 ACS  
 AN 55:36354 CA  
 OREF 55:7062d-e  
 TI The relation between catalytic activity and semiconductor properties of  
     germanium  
 AU Kuchaev, V. L.; Boreskov, G. K.  
 CS L. Ya. Karpov Phys.-chem. Inst., Moscow  
 SO Problemy Kinetiki i Kataliza, Akad. Nauk S.S.S.R. (1960), (No. 10), 108-10  
 DT Journal  
 LA Unavailable  
 CC 3 (Electronic Phenomena and Spectra)  
 AB The **catalytic** activity of pure Ge, sp. resistance 48-50 ohm-cm.,  
     30.5 g. in wt., surface area 4.3 sq. m.; n-type Ge contg. Sb, 0.01-22,  
     2.5; and **p-type** Ge contg. Tl, 0.08-22, 2.1, resp., was  
     investigated in the isotope exchange reaction by the static method at a  
     pressure of an equimol. mixt. of H and D of 0.7 mm. and at 120-70.degree.  
     in a vessel made from fused quartz. Ground monocryst. Ge passing a 0.2  
     mm. sieve was employed in the expts. after **removal** of O from its  
     surface by reduction with a mixt. of P and D at 1 mm. pressure and  
     500.degree. for 20 hrs. The **catalytic** activities of electron  
     and hole Ge were found to be similar. Specimens of pure Ge had at  
     150.degree. an activity 10 times greater than Ge contg. Sb or Tl. This  
     difference in **catalytic** activities decreases with increase of  
     temp.

IT Catalysis  
     (by germanium)  
 IT Semiconductors  
     (catalytic activity of Ge)  
 IT Oxidation  
     (photochem., of H2O on semiconductor catalysts)  
 IT 7440-56-4, Germanium  
     (catalytic activity of, elec. semiconducting properties and)  
 IT 7440-28-0, Thallium 7440-36-0, Antimony  
     (germanium contg., catalytic activity of, semiconducting properties  
     and)

> d 117 1 all

L17 ANSWER 1 OF 1 CA COPYRIGHT 2003 ACS  
AN 136:208327 CA  
TI Catalytic effect of Ni for activation of Mg-doped **GaN** in N2 and N2O  
AU Waki, I.; Fujioka, H.; Oshima, M.; Miki, H.; Okuyama, M.  
CS Department of Applied Chemistry, The University of Tokyo, Bunkyo-ku, Tokyo, 113-8656, Japan  
SO Journal of Crystal Growth (2002), 234(2-3), 459-462  
CODEN: JCRGAE; ISSN: 0022-0248  
PB Elsevier Science B.V.  
DT Journal  
LA English  
CC 76-3 (Electric Phenomena)  
AB **Catalytic** effect of Ni for activation of metalorg. CVD-grown Mg-doped **GaN** in N2 and N2O was studied. **P-type GaN** was obtained at an annealing temp. .gtoreq.200.degree. using the Ni **catalytic** film in N2O as well as in N2. Also, the hole concns. for the samples obtained by annealing in N2O were in good agreement with those obtained in N2 in the whole annealing temp. range. These results indicate that the Ni film effectively acts as a **catalyst** to enhance hydrogen desorption at the surface of **GaN**, which results in the redn. of hydrogen concn. in **GaN** at low annealing temps. Also probably the **catalytic** activity of Ni to enhance hydrogen desorption is much stronger than that of N2O. Therefore, an introduction of oxygen in the annealing atm. is not necessary for effective **removal** of hydrogen under the existence of the Ni film.  
ST nickel activation magnesium doped **gallium nitride**  
IT Catalysis  
Crystal growth  
Hole concentration  
Semiconductor materials  
(catalytic effect of Ni for activation of Mg-doped **GaN** in N2 and N2O)  
IT Vapor deposition process  
(chem.; catalytic effect of Ni for activation of Mg-doped **GaN** in N2 and N2O)  
IT Desorption  
(hydrogen; catalytic effect of Ni for activation of Mg-doped **GaN** in N2 and N2O)  
IT 7439-95-4, Magnesium, uses 7440-02-0, Nickel, uses  
RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
(catalytic effect of Ni for activation of Mg-doped **GaN** in N2 and N2O)  
IT 25617-97-4, **Gallium nitride (GaN)**  
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(catalytic effect of Ni for activation of Mg-doped **GaN** in N2 and N2O)  
RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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2000

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